

The Common Metadata Repository, the Earthdata Search Client, and Worldview

EOSDIS capabilities that can be leveraged toward an NRT Portal

NASA NRT Workshop Sep 27-29, 2016

Ryan Boller (NASA ESDIS) Katie Baynes (NASA ESDIS) Day 1: What software components exist which are relevant to NRT data access?

Day 2: How can we reuse existing software components to create an "NRT Portal"?

Common Metadata Repository (CMR)

Common Metadata Repository (CMR)

- What does it do?
 - It manages the metadata catalog for NASA's Earth observations + includes some external collection info
- What does it contain?
 - Collection info (e.g., "MODIS/Aqua Near Real Time (NRT)
 Aerosol 5-Min L2 Swath 10km")
 - Granule info (e.g., "BeginningDateTime:
 2016-09-26T01:20:00.000000Z")
 - Parameter info
 - Etc.



Collection HTML Response



Abstract

The ALTUS Cloud Electrification Study (ACES) was based at the Naval Air Facility Key West in Florida. During August, 2002, ACES researchers conducted overflights of thunderstorms over the southwestern corner of Florida. For the first time in NASA research, an uninhabited aerial vehicle (UAV) named ALTUS was used to collect cloud electrification data. Carrying field mills, optical sensors, electric field sensors and other instruments, ALTUS allowed scientists to collect cloudelectrification data for the first time from above the storm, from its birth through dissipation. This experiment allowed scientists to achieve the dual goals of gathering weather data safely and testing new aircraft technology. This dataset consists of data collected from seven instruments: the Slow/Fast antenna, Electric Field Mill, Dual Optical Pulse Sensor, Searchcoil Magnetometer, Accelerometers, Gerdien Conductivity Probe, and the Fluxgate Magnetometer. Data consists of sensor reads at 50HZ throughout the flight from all 64 channels.

Data Identification Fields: Data Dates

Duta Dutes		
Creation	2004-05-04T00:00:00.000Z	
Last Revision	2016-08-30T15:37:15.000Z	

Processing Level Quality

Distributions

1B

Media	Format	Sizes	Fees
	Binary		0.0

Spatial Coordinates
Bounding Rectangle
N: 26.0 S: 23.0 E: -81.0 W: -85.0

Location Keywords
No Spatial Keywords found

Temporal Coverages

DateTime Ranges
2002-07-10 to 2002-08-30

https://cmr.earthdata.nasa.gov/search/concepts/C1020-GHRC.html

Related URLs



Earthdata Search Client (EDSC)

Earthdata Search

- What is it?
 - A search and order tool for all EOSDIS data
 - Uses CMR metadata catalog for searches
- What can it do?
 - Search by keywords (e.g., atmosphere, aerosols, processing level)
 - Refine search by temporal and spatial constraints
 - Use dataset-specific services like subsetting
- How can the NRT community use it?
 - Can filter by NRT-specific datasets
 - Possibly filter by NRT application; more of this during tomorrow's "Building an NRT portal" talk





Global Imagery Browse Services (GIBS)

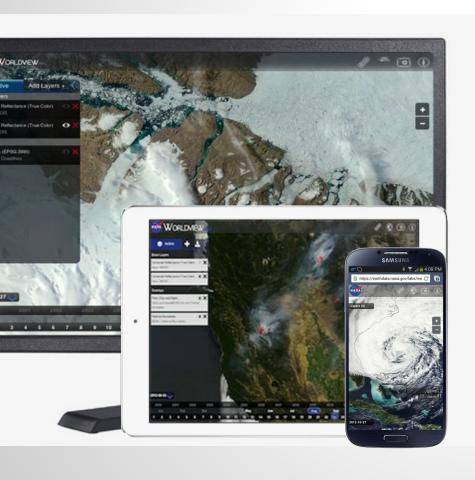
Worldview

Earth Observatory Natural Event Tracker (**EONET**)

Global Imagery Browse Services and Worldview

Driving Goal:

To transform how users interact with and discover NASA Earth data; make it visual



Approach:

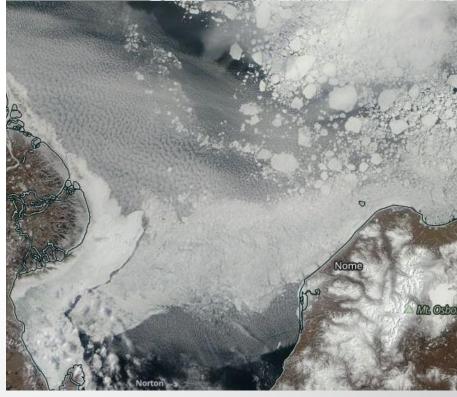
- The Global Imagery Browse Services (GIBS) provide open access to full resolution imagery derived from NASA products as web services to mapping clients and scripts
- Worldview is an open source, browser-based client to interactively explore GIBS imagery and download the underlying data

Imagery Available in Near-Real Time

Global Imagery Browse Services (GIBS)

 Most imagery is available within 3-5 hours of observation thanks to NRT data providers + LANCE



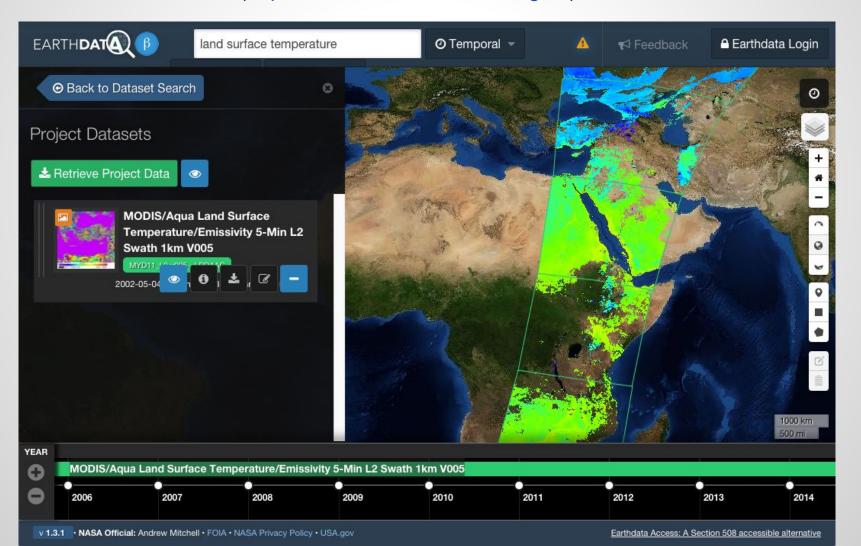


Yosemite Rim Fire, 2013 August 20-24

Sea ice near Nome, AK, 2014 April 23-28

Earthdata Search

Image representations of data granules served by GIBS can be viewed on a map in the Earthdata Search client (https://search.earthdata.nasa.gov/).



NASA Mission Tools Suite

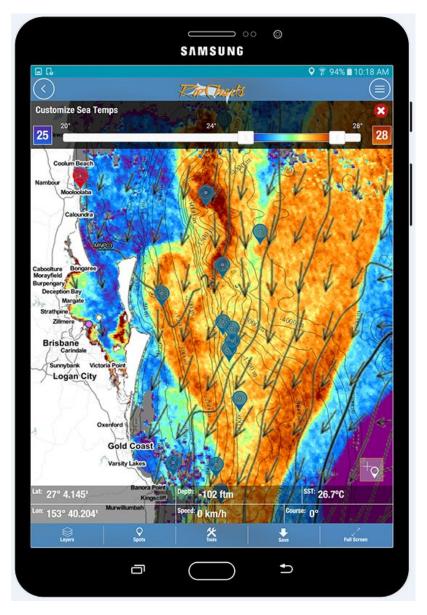
All GIBS imagery is available from within the NASA Mission Tools Suite (MTS), an airborne mission planning and operations site (https://mts.nasa.gov).



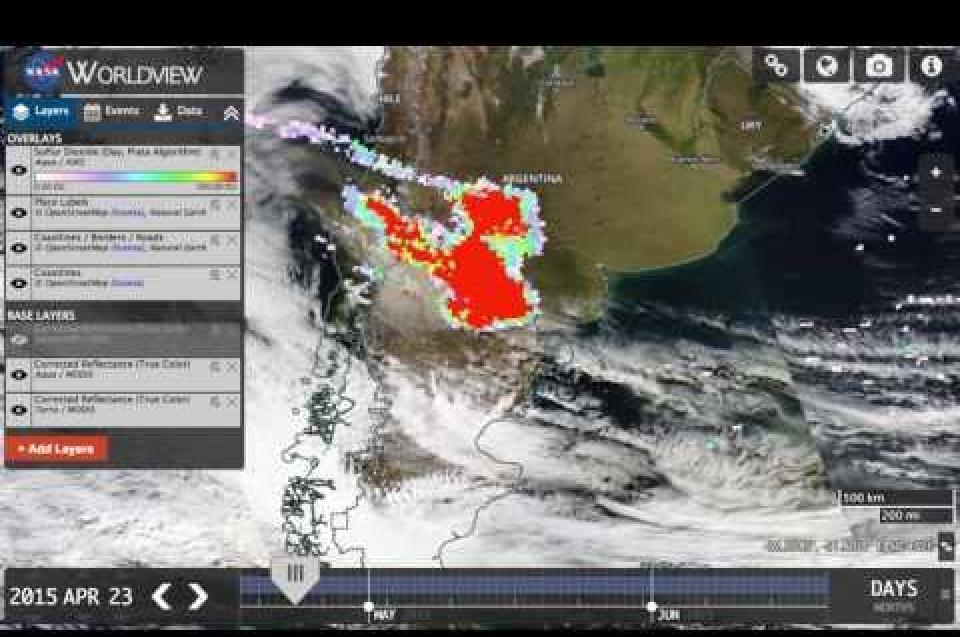
RipCharts for Anglers



(clearly not an angler)

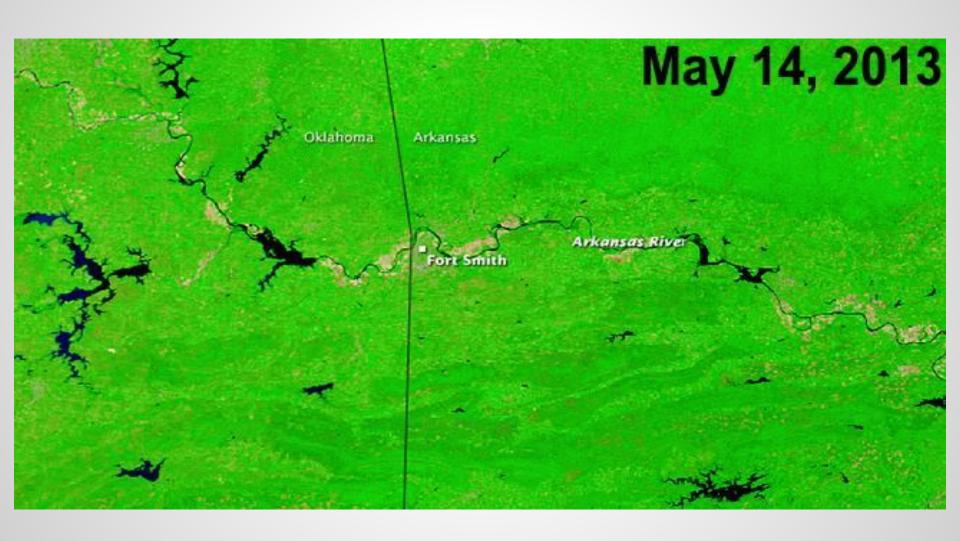






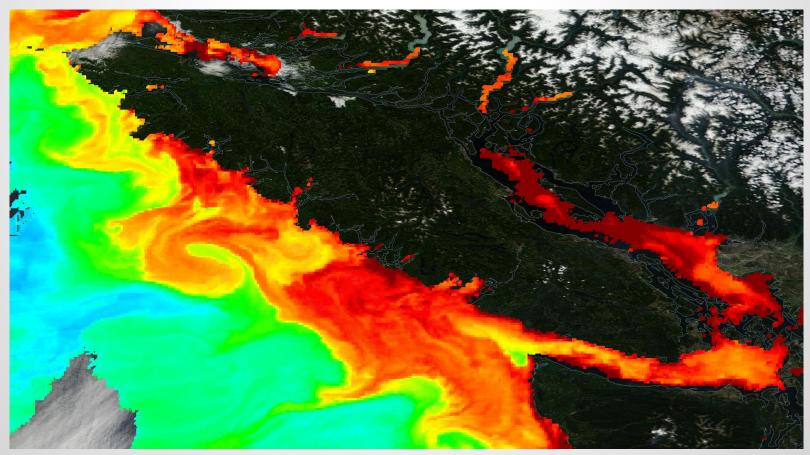
5 Before and After Images Show Drastic Changes After Record Rains In Texas and Oklahoma

By Jon Erdman | Published Jun 1 2015 05:58 PM EDT | weather.com



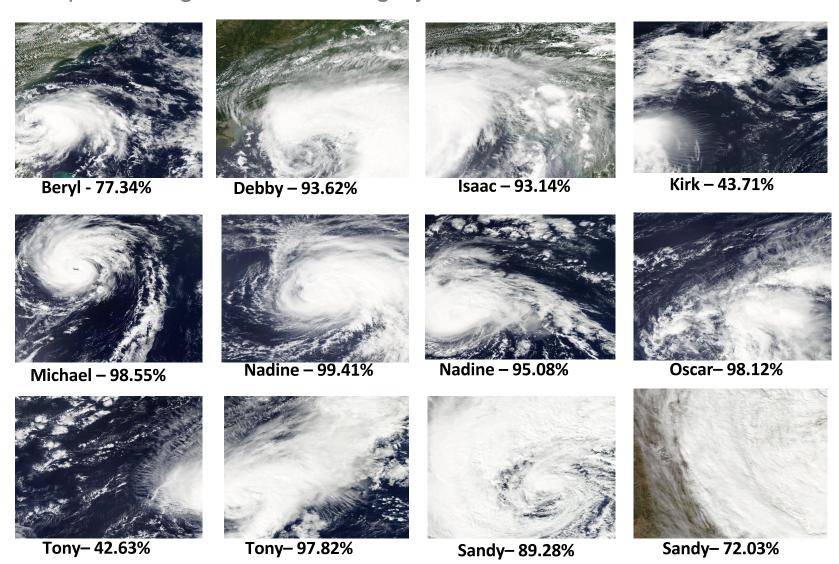


Record Algae Bloom Laced With Toxins is Flourishing in "The Blob" — and Spreading in the North Pacific By Tom Yulsman | August 6, 2015 6:34 pm



An animation of satellite images showing algae blooming in the waters around Vancouver Island on July 18, 2015.

Deep Learning from GIBS imagery; results below for correct classification



Earth Observatory Natural Event Tracker (EONET)

https://eonet.sci.gsfc.nasa.gov/

- Main ideas:
 - Repository of metadata about natural events
 - Accessible via web services
 - Events are curated and semi-automated
- Future ideas:
 - Allow curation by external parties including automated sources
- For more information, chat with Kevin Ward of the Earth Observatory Group (also here at this meeting)



On EONET in Worldview:

"It's so easy that a second grader could use it!"

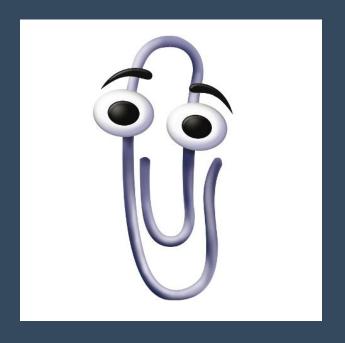
- Karen Michael, LANCE Manager

Takeaways

 These are things that we can use "as is" to find and use NRT data

- These are also things that we can further customize to meet the needs of this community
 - More on that tomorrow ("Building an NRT Portal" session)





QUESTIONS?

Blogs

/ CIMSS / CIMSS Satellite Blog /

Smoke over Indonesia and the western tropical Pacific Ocean

October 26th, 2015

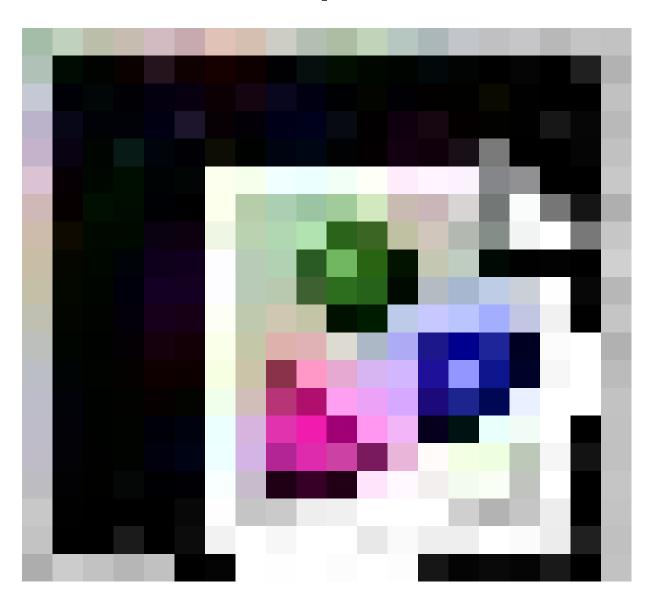


MODIS True Color Imagery, Aerosol Optical Depth and AIRS CO Concentrations on 26 October 2015

Recent Worldview Updates

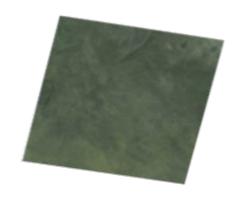
MODIS C6

imagery available!

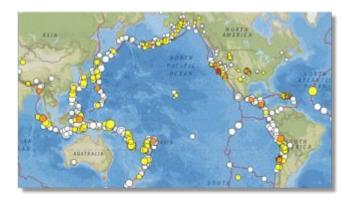




- Implementing:
 - Sub-Daily Imagery
 - Vector Based DataVisualizations



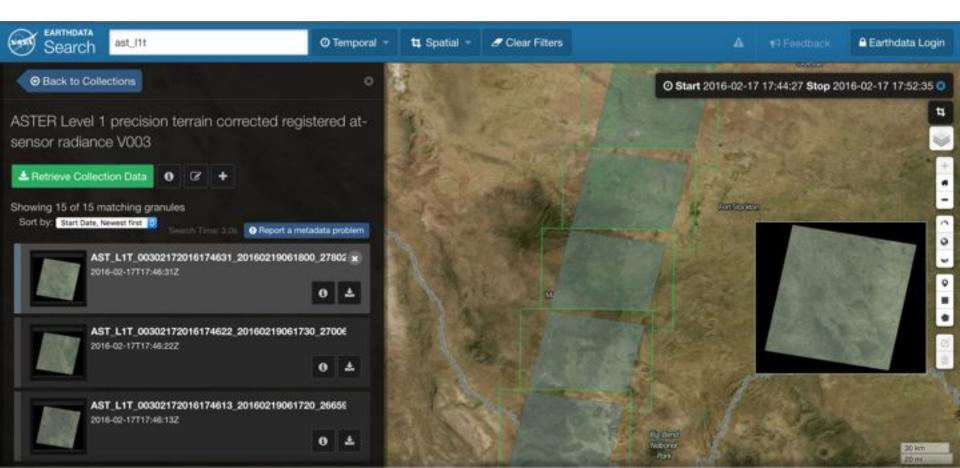






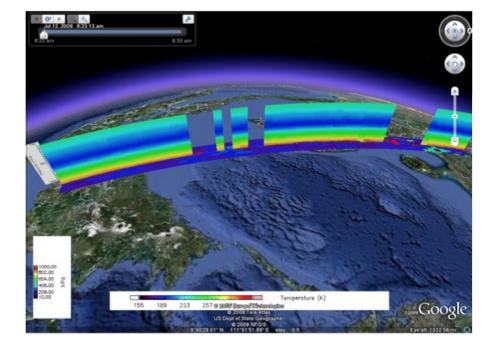
Sub-Daily Imagery

Earthdata Search Client Example for ASTER L1T



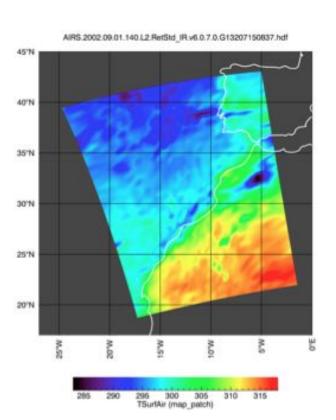
- Formulating:
 - Curtain and ProfileWorking Group
 - R&D: Dynamic Data

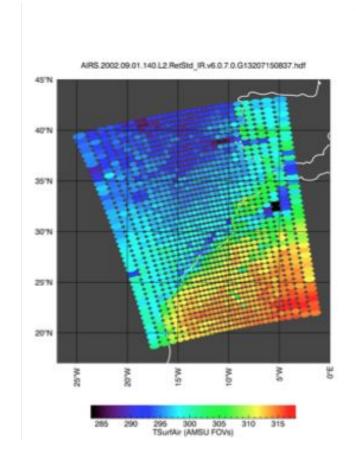
Visualizations





Dynamic Data Visualization

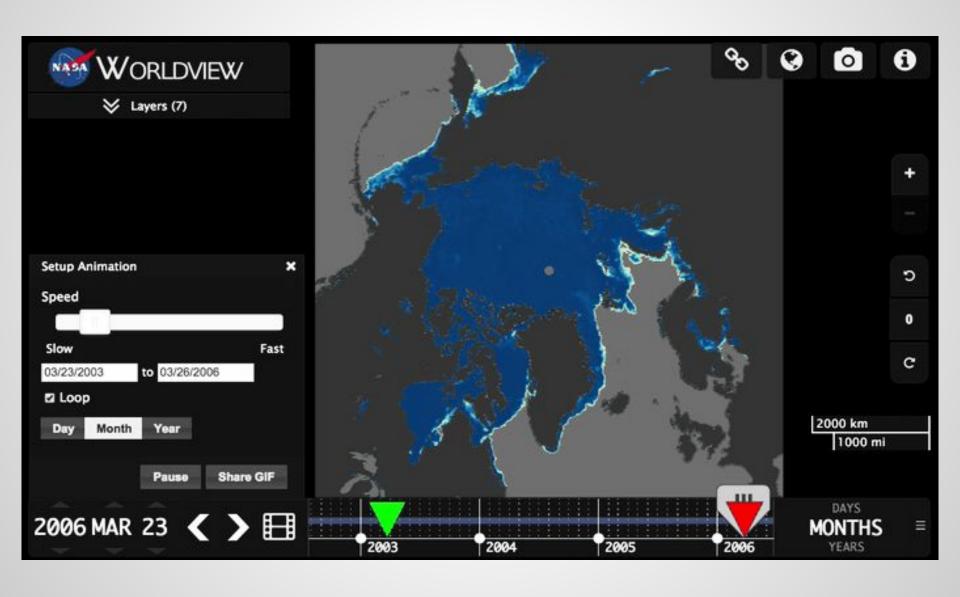






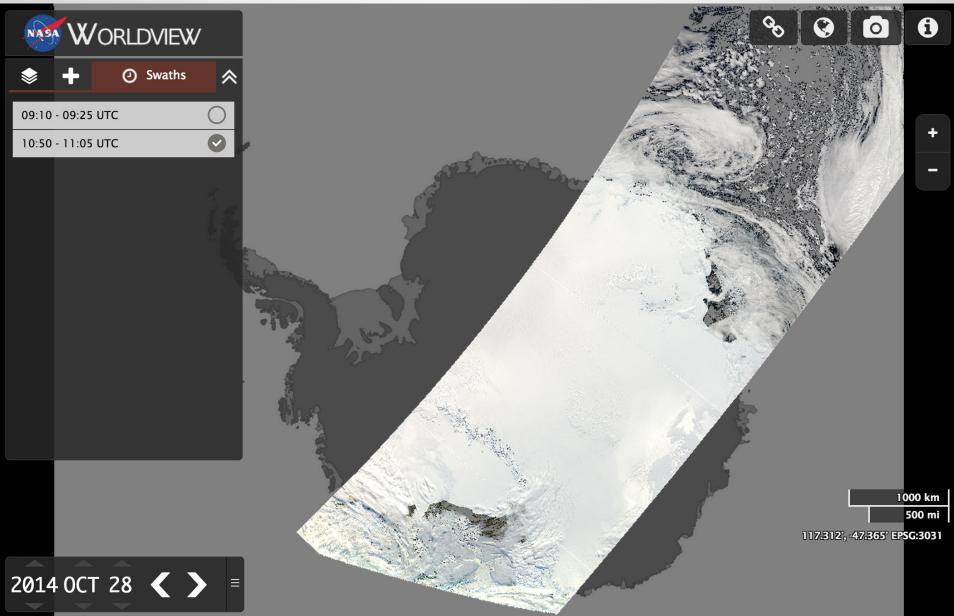
Worldview Plans

Animation ("Play Button") Feature

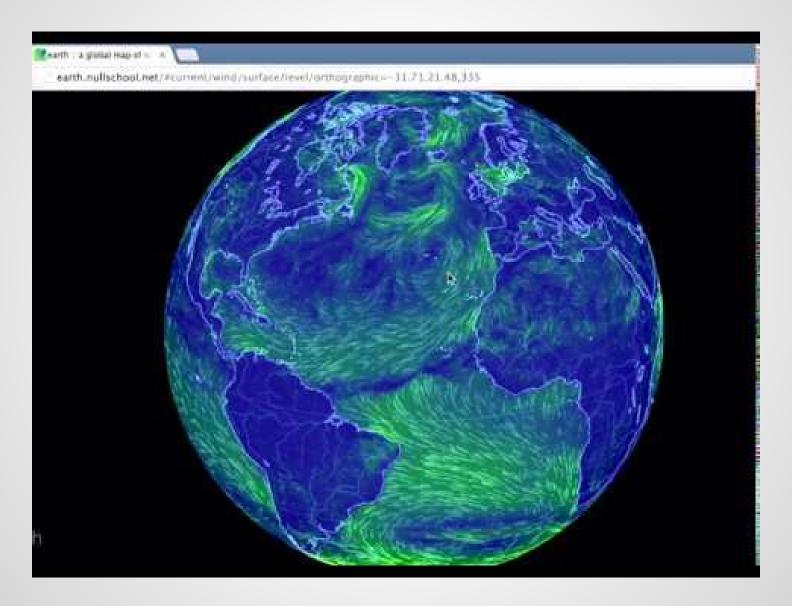


Mid-term Plans: Granule Support

"No Pixel Left Behind"



Longer-term Plans: Vector Support



Longer-term Plans: Profile Investigation

